

**REMARKS**

In the Office Action dated October 5, 2005, the Examiner objected to claims 15 and 16 as containing informalities. The Examiner further rejected claims 1-3, 5, 7-11, 13-19, 21-24, 26, 27 and 29-33 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 6,421,348 (hereinafter "GAUDET"). The Examiner also rejected claims 6, 12, 20 and 28 under 35 U.S.C. §103(a) as allegedly being unpatentable over GAUDET in view of U.S. Patent No. 5,790,786 (hereinafter "WAKEMAN").

Applicant hereby amends claims 1, 8, 14 and 22 to improve form and to substantially incorporate the subject matter of claims 5, 11, 18, and 26, respectively. Claims 2, 7, 9, 13, 15, 16, 21, 23 and 29 have been amended to improve form. Dependent claims 6, 12, 20 and 28 have been amended to change their dependencies. Dependent claims 19 and 27 have been amended to improve form and to change their dependencies. Claims 5, 11, 18, 26, and 30-33 have been canceled without prejudice or disclaimer. Reconsideration of the outstanding rejections of pending claims 1-3, 6-10, 12-17, 19-24 and 27-29 is respectfully requested in view of the amendments above and the following remarks.

In paragraph 2, the Office Action objects to claims 15 and 16 as containing informalities. Specifically, the Office Action asserts that the word "a" in front of the term "first packet" of claim 15, line 2, should be corrected to "the." The Office Action further asserts that the word "a" in front of the term "second packet" in claim 16, line 2, should be corrected to "the." Applicant has amended claims 15 and 16 in accordance with the suggestions of the Examiner. Withdrawal of the objection to claims 15 and 16 is, therefore, respectfully requested.

In paragraph 4, the Office Action rejects pending claims 1-3, 7-10, 13-17, 19, 21-24, 27 and 29 under 35 U.S.C. §103(a) as allegedly being unpatentable over GAUDET. Applicant respectfully traverses.

To establish a *prima facie* case of obviousness, the reference (or references when combined) cited by the Office Action must teach or suggest all of the claim features. *In re Vaeck*, 947 F.2d 488, U.S.P.Q.2d 1438 (Fed. Cir. 1991). See M.P.E.P. § 2143. In rejecting claim 1, the Office Action relies on various sections of GAUDET as allegedly disclosing the features recited in claim 1. Applicant submits, however, that GAUDET does not disclose or suggest the combination of features recited in amended claim 1.

GAUDET discloses the transfer of a packet from one data exchanger 110 to another data exchanger 160 within a network device for routing packets to their destinations (see column 3, line 63 – column 4, line 8). In the system of GAUDET, a packet is first received at an external physical layer 112 and then translated into frame data, which is subsequently provided to an input port 121 (see column 4, lines 55-60). The input port 121 monitors each incoming frame for a start of frame delimiter (SOF) and, upon receipt of the SOF, divides the frame data into 48 bit cells (see column 4, lines 63-65). Port 121 passes the divided cells to receive FIFO 134 (see column 4, lines 65-66). When the cells in FIFO 134 exceed a threshold, the cells are loaded into a bus FIFO (see column 4, line 66 – column 5, line 1). When the number of cells in the bus FIFO exceeds a threshold, bus FIFO transmits cells stored in the bus FIFO over a switch bus 150 to data exchanger 160 until all cells stored in the bus FIFO have been transmitted (see column 5, lines 3-6). GAUDET, thus, discloses the fragmentation of a packet into cells, storage of the cells in a FIFO queue, retrieval of the cells

from the FIFO queue when the number of cells in the FIFO queue has reached a threshold (i.e., not based on whether a cell is a first or last cell in a frame), and subsequent transmission of the retrieved cells via a switch data bus 150 to another data exchanger 160.

As further disclosed in column 7, lines 11-33, the other data exchanger 160 receives incoming cells from switch data bus 150 and stores the received cells in a buffer. The data exchanger stores the received cells in the buffer such that sequential cells associated with a single frame are stored in contiguous memory locations in the buffer (see column 7, lines 33-38). The data exchanger tests each cell as it is loaded into the buffer as to whether the cell contains an end of frame (EOF) indicator (see column 7, lines 39-43). If the cell contains an EOF, indicating that the cell is the last cell of a frame, then the data exchanger moves the cells of the frame from the buffer into an appropriate transmit FIFO for transmission (see column 7, lines 44-50).

In contrast to GAUDET, claim 1 recites “a method of converting a first data path carrying  $P$  packets per processing cycle to a second data path carrying  $Q$  packets per system clock cycle, wherein  $Q < P$ ” that includes “receiving the  $P$  packets during a first system clock cycle on the first data path,” “storing the  $P$  packets in a queue,” “shifting first data from the queue into a shift register,” “selectively retrieving data from the shift register until a first set of  $Q$  packets of the  $P$  packets is retrieved, wherein the data from the shift register is selectively retrieved based on a determination of whether the data comprises one of an end-of-packet indicator, a data field, or a start-of-packet indicator” and “sending the set of  $Q$  packets on the second data path during the first system clock cycle, wherein the second path is coupled to a processing device configured to process a maximum of  $Q$  packets per system

clock cycle.” As discussed above, GAUDET discloses retrieval of cells from a FIFO queue when the number of cells in the FIFO queue has reached a threshold, and not based on whether a cell is a first, last, or data cell (see column 5, lines 1-6). GAUDET, thus, does not disclose or suggest the retrieval of data from a shift register based on whether the data includes one of an end-of-packet indicator, a data field, or a start-of-packet indicator, as recited in amended claim 1.

Additionally, GAUDET discloses a bus FIFO that transmits cells stored in the bus FIFO over a switch bus 150 to a data exchanger 160 (see column 5, lines 3-6), which stores received cells and then reconstitutes the cells into corresponding packets and transmits the packets when all cells of a given packet have been received by the data exchanger (see column 7, lines 11-50). GAUDET does not disclose, or even suggest, however, that data exchanger 160 can process a maximum number of packets per a given system clock cycle and, thus, does not disclose or suggest “a processing device configured to process a maximum of  $Q$  packets per system clock cycle,” as further recited in amended claim 1.

Since GAUDET does not disclose or suggest every feature recited in amended claim 1, Applicant respectfully requests that the rejection of claim 1 under 35 U.S.C. §103(a) be withdrawn.

Claims 2 and 3 depend from claim 1. Withdrawal of the rejection of these claims is requested for at least the reasons set forth above with respect to claim 1.

Amended independent claim 7 recites similar features to those discussed above with respect to claim 1. Withdrawal of the rejection of claim 7 is respectfully requested for similar reasons to those set forth above with respect to claim 1.

Amended independent claim 8 recites a “method of converting a first data path carrying  $P$  packets per system clock cycle to a second data path carrying  $Q$  packets per system clock cycle, wherein  $Q < P$  that includes “receiving the  $P$  packets during a first system clock cycle on the first data path,” “storing the  $P$  packets in a queue,” “selectively shifting one or more first bytes of the  $P$  packets from the queue into a shift register,” “determining whether the one or more first bytes in the shift register comprises at least one of an end-of-packet byte, a data byte, or a start-of-packet byte” and “sending, based on the determination, a first set of  $Q$  packets, comprising at least a portion of the one or more first bytes, on a second data path during the first system clock cycle, wherein the second data path is coupled to a processing device configured to process only  $Q$  packets per system clock cycle.” As discussed above with respect to claim 1, GAUDET merely discloses the retrieval of cells from a FIFO queue when the number of cells in the FIFO queue has reached a threshold. GAUDET, thus, does not disclose or suggest the retrieval of one or more bytes from a shift register based on whether the one or more bytes includes an end-of-packet byte, a data byte, or a start-of-packet byte, as recited in amended claim 8.

Additionally, as discussed above with respect to claim 1, GAUDET merely discloses a bus FIFO that transmits cells stored in the bus FIFO over a switch bus 150 to a data exchanger 160 (see column 5, lines 3-6), which stores received cells and then reconstitutes the cells into corresponding packets and transmits the packets when all cells of a given packet have been received by the data exchanger (see column 7, lines 11-50). GAUDET does not disclose, or even suggest, however, that data exchanger 160 can process a maximum number of packets per a given system clock cycle and, thus, does not disclose or suggest “a processing

device configured to process only  $Q$  packets per system clock cycle,” as further recited in claim 8.

Furthermore, as discussed above with respect to claim 1, GAUDET discloses the fragmentation of a packet into 48 bit cells, the storage and retrieval of the cells, and transmission of the cells to another data exchanger. GAUDET, however, does not disclose the storage and retrieval of packets at a byte level and, thus, does not disclose “selectively shifting one or more first *bytes* of the  $P$  packets from the queue into a shift register” or “determining whether the one or more first *bytes* in the shift register comprises at least one of an end-of-packet *byte*, a data *byte*, or a start-of-packet *byte*,” as additionally recited in amended claim 8. Withdrawal of the rejection of this claim is, therefore, respectfully requested.

Claims 9 and 10 depend from claim 8. Withdrawal of the rejection of these claims is requested for at least the reasons set forth above with respect to claim 8.

Claim 13 recites similar features to those discussed above with respect to claim 8. Withdrawal of the rejection of claim 13 is requested for similar reasons to those set with respect to claim 8.

Amended independent claim 14 recites a “method of processing packets” that includes “receiving a plurality of packets on a first data path,” “converting the plurality of packets on the first data path to a first packet on a second data path,” “processing the first packet on the second data path during a first system clock cycle, wherein a processing device that is configured to process only one packet per processing cycle processes the first packet on the second data path during the first system clock cycle,” “converting the

plurality of packets on the first data path to a second packet on the second data path” and “processing the second packet on the second data path during a second system clock cycle.”

As discussed above with respect to claim 1, GAUDET merely discloses a bus FIFO that transmits cells stored in the bus FIFO over a switch bus 150 to a data exchanger 160 (see column 5, lines 3-6), which stores received cells and then reconstitutes the cells into corresponding packets and transmits the packets when all cells of a given packet have been received by the data exchanger (see column 7, lines 11-50). GAUDET does not disclose, or even suggest, however, that data exchanger 160 can process a maximum number of packets per a given system clock cycle and, thus, does not disclose or suggest “wherein a processing device that is configured to process only one packet per processing cycle processes the first packet on the second data path during the first system clock cycle,” as recited in amended claim 14. Withdrawal of the rejection of claim 14 is, therefore, respectfully requested.

Claims 15-17 and 19 depend from claim 14. Withdrawal of the rejection of these claims is requested for at least the reasons set forth above with respect to claim 14.

Amended independent claim 21 recites similar features to those discussed above with respect to claim 14. Withdrawal of the rejection of claim 21 is requested for similar reasons to those set forth above with respect to claim 14.

Amended independent claim 22 recites similar features to those discussed above with respect to claim 8. Withdrawal of the rejection of claim 22 is requested for similar reasons to those set forth above with respect to claim 8.

Claims 23, 24 and 27 depend from claim 22. Withdrawal of the rejection of these claims is requested for at least the reasons set forth above with respect to claim 22.

Amended independent claim 29 recites similar features to claim 22. Withdrawal of the rejection of this claim is requested for similar reasons to those set forth above with respect to claim 22.

In paragraph 5, the Office Action rejects claims 6, 12, 20 and 28 under 35 U.S.C. §103(a) as allegedly being unpatentable over GAUDET in view of WAKEMAN. The Office Action cites WAKEMAN as disclosing a cyclical redundancy checker (CRC). Applicant submits, however, that the CRC disclosed in WAKEMAN does not remedy the deficiencies in the disclosure of GAUDET noted above with respect to claims 1, 8, 14 and 22, from which claims 6, 12, 20 and 28 depend, respectively. Withdrawal of the rejection of claims 6, 12, 20 and 28 under 35 U.S.C. §103(a) is respectfully requested for at least the reasons set forth above with respect to claims 1, 8, 14 and 22.



In view of the foregoing amendments and remarks, Applicant respectfully requests the Examiner's reconsideration of this application, and the timely allowance of the pending claims. If any questions remain, the Examiner is invited to contact the undersigned at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 CFR § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,



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